

## CLAIMS:

1. A one-step process for producing a purified phenol stream, said one-step process comprising:

contacting a phenol stream containing an initial concentration of hydroxyacetone and methylbenzofuran with an acidic ion exchange resin at a temperature of 50°C to 100°C to concurrently reduce the initial concentration of the hydroxyacetone and the methylbenzofuran in the phenol stream to produce the purified phenol stream.

2. The one-step process of Claim 1, wherein the initial concentration of the hydroxyacetone is less than or equal to 500 parts per million and wherein initial concentration of the methylbenzofuran is less than or equal to 250 parts per million of the phenol stream.

3. The one-step process of Claim 1, wherein contacting the phenol stream with said acidic ion exchange resin is a batch method or a continuous method.

4. The one-step process of Claim 4, wherein said batch method comprises contacting said phenol stream with the acidic ion exchange resin catalyst for a duration of about 1.5 hours to about 23 hours.

5. The one-step process of Claim 4, wherein said continuous method comprises contacting said phenol stream with the acidic ion exchange resin catalyst at a weighted hourly space velocity of 0.1 to 5.

6. The one-step process of Claim 4, wherein said continuous mode comprises contacting said phenol steam with the acidic ion exchange resin catalyst at a weighted hourly space velocity of 1 to 2.

7. A one-step purified phenol stream obtained in accordance with the method of Claim 1, wherein said purified phenol stream comprises less than or equal to 50 parts per million of methylbenzofuran and less than or equal to 10 parts per million of hydroxyacetone.

8. The one-step process of Claim 1, wherein contacting the phenol stream with said acidic ion exchange resin is at a temperature of about 70°C to about 90°C.

9. The one-step process of Claim 1, wherein said acidic ion exchange resin comprises a hydrogen form of a sulfonated styrene-divinylbenzene ion exchange resin.

10. The one-step process of Claim 9, wherein said acidic ion exchange resin catalyst is crosslinked at about 1 to about 20 weight percent of divinylbenzene relative to an overall weight of said acidic ion exchange resin.

11. The one-step process of Claim 9, wherein said acidic ion exchange resin catalyst is crosslinked with greater than or equal to about 8 weight percent of divinylbenzene relative to an overall weight of said acidic ion exchange resin catalyst.

12. A continuous process for producing a purified phenol stream, said process comprising:

contacting a phenol stream at a temperature of 50°C to 100°C and at a weighted hourly space velocity of 0.1 to 5 with a sulfonated styrene-divinylbenzene acidic ion exchange resin, wherein the resin is crosslinked with greater than or equal to about 8 weight percent of divinylbenzene relative to an overall weight of said acidic ion exchange resin, and wherein the phenol stream has an initial concentration of hydroxyacetone and methylbenzofuran to concurrently reduce the initial concentration of the hydroxyacetone and methylbenzofuran and form products having a boiling point greater than phenol; and

distilling said treated phenol stream.

13. The continuous process of Claim 12, wherein the initial concentration of hydroxyacetone is less than or equal to about 500 parts per million and the initial concentration of methylbenzofuran is less than or equal to about 250 parts per million.

14. The continuous process of Claim 12, wherein reducing the initial concentration of the hydroxyacetone and methylbenzofuran comprises lowering the initial concentration of the hydroxyacetone to less than or equal to about 10 parts per million and the initial concentration of the methylbenzofuran to less than or equal to about 50 parts per million.

15. A process comprising:

contacting a phenol stream containing an initial concentration of hydroxyacetone and methylbenzofuran with an acidic ion exchange resin at a temperature of 50°C to 100°C to concurrently reduce the initial concentration of the hydroxyacetone and the methylbenzofuran in the phenol stream.